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SPRAYING BULLETIN

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(Third Edition)



HORTICULTURE

ORCHARD CLEANSING


REMEDIES

FOR

INSECT PESTS AND DISEASES

November, 1908.

Inspector of Fruit Pests.



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PREFACE

TO THE

THIRD REVISED EDITION

The first edition of this Bulletin, consisting of seven thousand copies, was issued about one year ago. There was such an unexpected demand for it that a second edition of twenty thousand copies was printed and distributed throughout the Province. This issue is now exhausted, and it has become necessary to issue another thirty thousand copies.

A year's experience has added much valuable information as to the relative merits of the several spraying mixtures recommended. We have conducted successful experiments with the No. 1 Mixture (Lime-Sulphur-Salt), both as an insecticide and fungicide. There are several brands on the market, all of which have given fairly good results as insecticides.

Early last Spring Professor Cordley, of Corvallis Agricultural College, a most distinguished scientist and successful horticulturist, published in the Horticultural Press a statement of experiments which he had successfully conducted with the Lime-Sulphur solution as a fungicide, especially valuable as a remedy against Apple Scab, "*Fusicladium dendriticum*."

Acting on the report of Professor Cordley, some of our growers used the Lime-Sulphur solution as a summer spray at a strength of one gallon of the ready-made concentrated mixture to fifteen gallons of water, with results injurious to both fruit and foliage.

In experiments conducted by this staff, it was found that by adding six pounds of really fresh lime to the barrel of dilute Lime-Sulphur solution, that is, three gallons of the "Rex," "Niagara" or "Pendray" mixtures to the forty-five gallon barrel of water, no injury whatever was done. The lime prevented any scorching of the foliage and fruit. The experiments were conducted in several orchards in the vicinity of Vancouver and at Kamloops. The effect on both trees and fruit was exceedingly satisfactory. I would, therefore, recommend fruit growers to conduct such experiments on their own account.

Test the solution on one or two trees of different varieties, and if no injury is apparent, the spraying may be done with incalculable benefit to the trees and fruit.

Our experiments proved the superiority of the Lime-Sulphur-Salt solution, made according to the formula published in this Bulletin. While it may be troublesome to make, it is certainly safe and satisfactory.

While the Lime-Sulphur-Salt solution may be used with advantage as a summer spray, it is not intended to recommend it as a complete substitute for Bordeaux Mixture. The Winter strength Bordeaux, when carefully made according to formula, namely, eight pounds of sulphate of Copper to eight pounds of Lime, and applied immediately after being prepared, is still the best remedy for Bark Disease, and the destruction of all fungus spores. This mixture should be applied early in the Fall.

In addition to our experiments with the Lime-Sulphur-Salt solution, we have conducted very exhaustive tests with Arsenate of Lead, with most satisfactory results.

I can, therefore, safely recommend this invaluable insecticide as by far the best remedy for spraying against Codling Moth and all other larvae that attack deciduous fruit.

Fruit growers must be on the watch for the advent of the Codling Moth, which is so much in evidence in the States and Provinces south and east of British Columbia.

It has been erroneously held by many of our fruit-growers and experts that by reason of the high altitude of B.C. and proximity to the sea of the sections of the Province lying west of the Cascade Mountains, that we have nothing to fear from the Codling Moth. This is a most erroneous and mischievous opinion to hold and is liable to cause serious disappointment unless it be speedily corrected.

It is now an established fact, which I am in a position to prove, that the Codling Moth can become a most serious pest in any climate where apples and pears are grown. I would, therefore, urge the necessity of enforcing the most stringent protective measures, such as the close inspection of all imported fruit, and the destruction by cremation of all empty boxes and barrels in which both fruit and vegetables have been packed and shipped into this Province. Such empty packages invariably contain larvae of the dreaded Codling Moth.

Another very valuable insecticide which is sure to become a useful and popular remedy against all Aphides and Flea Beetles, was tested by the writer during the past season, with great success.

Extract of Tobacco, now commercially known as "Black Leaf," manufactured in Kentucky, is the best form of nicotine, the insecticidal value of which has been long known to some European experts. In conducting experiments against the Hop Beetle, whose ravages in the destruction of the Hop crop is estimated at \$75,000 per annum, it was found that nicotine was effective when all other remedies had failed.

It is expected that a supply of Black Leaf will be carried in stock by some of our commercial concerns during the coming year. Full particulars regarding this will be published in the British Columbia papers in due course, and further tests will be conducted during the coming season.

THOMAS CUNNINGHAM.

VANCOUVER, B.C.,
November 17th, 1908.



INTRODUCTION

— TO —

SPRAYING BULLETIN

To the Fruit Growers of British Columbia,
GREETING:

This Province now stands in the very front rank as the foremost fruit growing country of the world. From the year 1888 we have taken the highest awards wherever British Columbia fruit has been placed in competition with that produced in other countries. We have never been defeated or taken second place at any exhibition during these eighteen years. These triumphs have been won by a comparatively few fruit growers, but there is no reason whatever why the majority of growers should not achieve equal success.

Our geographical position to the Great Western Empire, which is now being rapidly populated, is such, and our superb climate is so suitable for the production of fruit of the highest quality in color, flavor and texture, that such a thing as over-production is not possible. The best proof of this fact is the high prices now paid for good clean fruit compared with what they were ten years ago.

The market quotations show that prices have advanced from fifty to one hundred per cent. during the past ten years. This advance in prices applies mainly to first-class fruit. Unfortunately many growers have not yet been aroused to the necessity of taking such measures in the intelligent care of their orchards as will enable them to reap the full benefits of present opportunities. They are not sending first-class fruit to market.

The time has arrived for a FORWARD MOVEMENT all along the line of orchard work, so as to bring profitable fruit-growing within the reach of all, and at the same time maintain a reputation which has cost so much, and is our most valuable asset.

This can only be done by immediate and persevering attention being given by all orchardists and owners of fruit trees to pruning and spraying their trees with such remedies as are found in the following pages and which have been fully tested, not only in our own Province but in other competitive countries.

It has been the aim of the writer to avoid all technicalities, and to describe the several formulæ in the simplest language, so that mistakes may not be made by persons of ordinary intelligence. It is necessary, however, to follow out the instructions to the letter.

If any fault is to be found with this list of remedies it will be in the line of there being too many prescriptions and thus confusing the fruit grower, but there are many owners of gardens and plants who need to be advised in the use of simple remedies.

The standard sprays for the fruit growers may be reduced in number to Lime, Sulphur and Salt for Winter; Bordeaux Mixture for both Winter and Summer, and Arsenate of Lead for Summer. With these three sprays the whole line of successful orchard work and destruction of pests and disease may be accomplished.

The first steps taken in this campaign have been to send out through all the fruit growing sections of the Province

posters announcing that immediate steps *must* be taken to prune and cleanse the fruit trees or cut down those infected and diseased trees that are not worth saving. This must be done by the owners or parties in possession of the premises. Any failure in carrying out these regulations will result in the expense of prosecution, which must ultimately fall on the owner.

PRUNING

Should be thorough; cut out all surplus wood so as to open the heads of the trees to air and sunshine; in cutting off all large limbs be very sure that no stumps of branches are left. Cut close up to the trunk and cover the wound with any paint that will protect it from moisture. This is most important for it not only prevents injury to the trunk of the tree, but is a preventative against fungus disease attacking the exposed wound.

After pruning has been done all prunings and trash of every description in the orchard must be burnt up, for it is found that such neglected rubbish is a favorite harbor for insect pests.

The first spray to use is the infallible Lime, Sulphur and Salt; this is not only the best insecticide known to science, it is also a valuable fungicide. The writer has no hesitation in recommending its general use even where no insect pests are in evidence. A trial will convince any grower of its great value. Salt is recommended because the spray adheres better to the surface of the trees; it has the same effect as when used in white-wash. Good adhesive white-wash is never made without salt.

The second spray to use is the double-strength Bordeaux which is undoubtedly the best fungicide yet discovered. It

took the most talented French experts twenty years' experimenting to determine the value of the Bordeaux. We are indebted to France for this discovery. It is well known that apple-tree Anthracnose (bark disease) is a fungus disease that may be cured by the use of the double-strength Bordeaux, when trees are dormant, beginning as soon as leaves have fallen. The writer would not hesitate to use ten pounds of Sulphate of Copper to the barrel of water when trees are dormant, if bark disease is in evidence. For Summer spray the dilute Bordeaux, viz., 4 x 4 x 50, is as strong as should be used.

The first spraying in Summer should begin after buds open; the second, after the blossoms fall, and it is always better to add five ounces Paris Green to the barrel of Bordeaux at the second spraying. This is a protection against Codling Moth and the lesser Apple Worm, and any other leaf eating insect. Follow the directions carefully in keeping the mixture well agitated.

We now come to the arsenical sprays: the first and most valuable is the Arsenate of Lead. We are indebted to our American friends for this invaluable remedy, which may be used almost any strength without the slightest danger to foliage. The writer has used three pounds to the barrel of water with good results. Arrangements have been made with the manufacturers to place a stock of it with Messrs. Brackman & Ker Milling Co., at Vancouver, Victoria and Nelson; it will be sold at manufacturers' prices with freight and duty added.

Use Arsenate just as soon as the blossoms fall, then again when the fruit is formed, and the calyx pointing upwards; fill the calyx with the spray and also cover both fruit and foliage.

Third, and most important, spraying should be done in August to catch the second brood of worms. It has been proved in the neighboring States that the August spraying has been the most effective.

It may be as well to remind the reader that the sale of infected or disease local fruit will not be permitted, unless we are prepared to open our market to diseased fruit from all parts of the world. We cannot in justice exclude infected fruit from other countries and at the same time permit our own diseased fruit to be sold in our own markets and shipped to the North-West Provinces and Manitoba, to the great injury of our reputation.

In a word, infected fruit will be seized and condemned wherever found. The duty of enforcing these regulations is exceedingly unpleasant, but after all, it is only kindness to the fruit grower to compel him to protect his own interests and those of the country in which it is his good fortune to have his home.

A thoroughly revised up-to-date edition of the illustrated report of the Inspector of Fruit Pests, descriptive of insects and diseases common to horticulture, will be issued during the year.

Thanking you in anticipation of your cordial co-operation.

I am,

Your faithful friend,

THOMAS CUNNINGHAM,
Provincial Inspector of Fruit Pests

VANCOUVER, B.C.,

November, 1908.

PROTECTION OF HORTICULTURE

As an illustration of the great advance being made in the line of protection of horticulture in the neighboring State of Washington (our strongest competitor), I herewith append Section 14 of the amended Horticultural Act of Washington. It will be seen that our American friends are keenly alive to their own interests. We of British Columbia cannot afford to do less for our country if we are to hold our trade.

Section 14, Washington Horticultural Amended Act.

“Any person or persons who shall bring into the State, have in their possession, or offer for sale, or distribute or give away trees, shrubs, FRUIT or other material infested with any kind of insect pest injurious to fruit, fruit-trees, or plants, shall be guilty of a misdemeanor and upon conviction thereof shall be punished by a fine of not less than fifty dollars nor more than five hundred dollars, or by imprisonment in the county jail not less than sixty days nor more than one year: Provided that for each repeated offence the person or persons convicted may be punished by a fine of not less than two hundred dollars nor more than eight hundred dollars, or by imprisonment not to exceed two years. Any person or persons who shall sell, offer for sale, distribute or give away any tree or trees, root or roots, grass, cuttings, or scions infected with insect pests, spores or fungus growth shall be deemed guilty of a misdemeanor and on conviction thereof shall be punished by a fine of not less than fifty

dollars nor more than two hundred dollars, or by imprisonment in the county jail not less than fifteen days nor more than thirty days. A repetition of the offence shall subject the offender to increased penalty not over the maximum above stated."

After a careful study of the provisions of the Washington Act as set out in the above section, no fair-minded British Columbia fruit grower can object to the very moderate steps that we are taking for the safety of our orchards and the protection of really progressive orchardists.

THOMAS CUNNINGHAM,

Inspector.



REMEDIES

Recommended by the Provincial Inspector of Fruit Pests
for the

Destruction of Insects, Pests and Diseases

Winter Sprays to be used only when the trees are dormant.
Number One solution the best of all.

WINTER SPRAYS.

SPRAY No. 1.

Winter Spray for Woolly Aphis and Scale Insects.

Ingredients.

Lime, unslacked.....	30 lbs.
Sulphur (sublimed).....	20 “
Salt, coarse.....	10 “
Water	50 Imp. gals.

Directions.

Place ten pounds of lime and twenty pounds of sulphur in a boiler with twenty gallons of water, and boil over a brisk fire for two hours, until the sulphur is thoroughly dis-

solved. It will then be amber-colored. Next place twenty pounds of lime in a cask and pour water enough over it to thoroughly slack it. Add the Salt, when dissolved, to the lime and sulphur and boil half an hour longer. Add enough water to make fifty gallons. Apply at a temperature of 130° in the tank.

Directions for Use.

Spray when the trees are dormant, or as soon as the leaves fall, and again in the spring before the buds swell. A good force-pump should be used, and care must be taken to thoroughly cover the infected trees from the ground to the tips of the shoots with the mixture, which should be constantly stirred when applying.

NOTE.—To insure freedom from lumps, it is advisable to pass the mixture through a wire sieve or strainer. Nozzles which are self-cleaning and adjustable, such as the "Improved Spramoter, two-cluster Vermoral," "Improved Bean," and "Bordeaux" are best adapted for distributing this and other spraying mixtures which contain a considerable amount of solid matter.

NOTE.—The Lime-Sulphur solution has a very beneficial effect on the health of the trees; it acts as a tonic, is anti-septic, stimulates growth and clean healthy foliage.

SPRAY No. 15.—LYE AND SOAP WASH.

For Winter use only.

Ingredients.

Concentrated Lye	1 lb.
Whale Oil Soap	1 lb.
Water	5 gals.

Directions.

Dissolve the lye and soap in hot soft water. The mixture is to be used at a temperature of 130° in the tank and applied with a good spray pump; "Sparamoter Vermoral" Nozzle will give the best results. One thorough application in the Fall and another before growth commences in the Spring should be made when used against Woolly Aphides and insect eggs. This is also an excellent wash to remove moss or lichen from trees and bushes.

NOTE.—For the best results SOFT WATER is indispensable in the production of spraying solutions. When spring water is used, it being usually charged with minerals, curdling and disintegration of the chemicals is sure to follow, causing disappointment and failure.

The use of the Lye-Soap Wash, No. 15, is not recommended for successive sprayings, as it has a tendency to contract or bind the bark. It should not be used on CHERRY, PEACH, APRICOT OR PLUM TREES. The Lime-Sulphur spray is much superior and safer for these varieties.

In order to prevent injury to the hands of the person using the corrosive sprays, it is recommended that ordinary

buckskin or leather gloves be steeped in oil for a few hours, then dried, after which they will afford ample protection.

BORDEAUX MIXTURE—Double Strength WINTER SPRAY

For Cure of all Fungus Diseases, such as Apple Scab, Plum and Cherry Rot, Peach Curl Leaf, and Bark Disease.

Ingredients.

Sulphate of Copper (Bluestone).....8 to 10 lbs.
 Fresh Unslacked Lime8 lbs.
 Water (Soft) 50 gals.

Directions.

Dissolve the eight to ten pounds of copper with boiling water in a wooden vessel, and when thoroughly dissolved, add sufficient water to make twenty-five gallons.

In another vessel dissolve eight pounds FRESH unslacked lime (Marble Bay Brand is very superior). Use boiling water in slacking the lime and when thoroughly dissolved—it should be as fine as flour—add sufficient water to make twenty-five gallons. Into a third barrel or tank let the two solutions be poured simultaneously so as to mix as they are poured. This will give fifty gallons of first-class Bordeaux which should be used IMMEDIATELY, for it is a well-known fact that Bordeaux Mixture begins to decompose within twenty-four hours after it is made, and gradually becomes

worthless. Much disappointment has been caused by inattention to this fact.

The solution should be strained into the spraying tank through a fine wire strainer. Burlap should not be used in straining, for the lint is liable to be carried into the nozzle and cause much trouble.

The "Spra-moter Self-Cleaning Vermoral" nozzle (two-cluster), is by far the best for spraying Bordeaux, as it distributes the spray in a fine mist. THIS IS THE SECRET OF GOOD SPRAYING.

Care of Spray Pumps, Hose and Nozzles.

In order to prolong the life and usefulness of spray-pumps, hose and nozzles, it is absolutely necessary to pump clean water through the apparatus for ten minutes after use and before it is put away. Many excellent pumps have been ruined by neglect of this precaution.

SUMMER SPRAYS.

For Insect Pests such as Green Aphís and all Plant Lice.

SPRAY No. 2.

For Aphís and all Plant Lice

Quassia Chips.....	8 lbs.
Whale Oil Soap	7 lbs.
Water	100 gals.

Directions.

Boil the quassia chips in about one gallon of water to each pound of quassia chips for one hour. Dissolve the soap in hot or boiling water; strain and mix together, then add the required amount of water to make 100 gallons.

To be used with spray pump with as much force as possible. This is the standard remedy for aphís in hop-yards and has given good results against other forms of aphides wherever tried, with no injury to foliage. This is our best contact insecticide.

SPRAY No. 8.—HELLEBORE.

An Internal Poison and also a Contact Insecticide; a Remedy for Pear and Cherry Slugs, Gooseberry and Currant Worm.

Directions.

For use with spray pump, take one ounce fresh white hellebore to one gallon of water, steep the hellebore in one

pint of boiling water for one hour, then add the balance of water, cold. Hellebore may also be used in the powder form, dusted on the trees or plants treated. A machine or powder gun is used for applying hellebore on a large scale, and is very satisfactory. In all cases care should be taken to get fresh hellebore to ensure the best results.

WHALE OIL SOAP SOLUTION.

Summer Spray for Scale Insects in the Active Breeding State.

Directions.

Dissolve one pound of whale oil soap in four gallons hot water, and spray at a temperature of 130 in the tank.

SPRAY No. 5.—KEROSENE EMULSION.

When Carefully Made is Useful for Scale Insects in the Breeding Stage, Plant Lice, Mealy Bugs, Red Spider, Cabbage Worms and Currant Worms.

Directions.

Hard Soap, shaved fine.....	½ lb.
Water	1 gal.
Kerosene	2 gals.

Dissolve the soap in boiling water, add the kerosene to the boiling suds, then churn with a force pump for a few minutes until the whole forms a creamy mass, which will thicken in to a jelly-like substance on cooling. The emulsion

thus made is to be diluted before using with nine to twelve gallons of water.

It is worthy of note that emulsion is much more easily made with soft water, and if water is very hard it is difficult to make a permanent emulsion.

It is advisable, therefore, to use rain water, or soften hard water by adding soda or borax.

Kerosene emulsion has an established reputation in the Eastern Provinces and States as a remedy for plant lice, but on the Pacific Coast it has not proved so satisfactory; injury to foliage in some cases has been reported.

Wherever failure has been experienced is probably owing to carelessness in making the solution.

SPRAY No. 7.—RESIN WASH.

For Aphis and Scale Insects.

Directions.

Resin	4 lbs.
Sal Soda	3 lbs.

Place the resin and sal soda in a kettle with three pints of cold water (soft or rain water), boil or simmer slowly until thoroughly dissolved, when it will look black. The sal soda will adhere to the sides of the kettle and must be scraped down. When sufficiently boiled the resin being completely dissolved, add enough water to make fifty gallons. After adding the water it will become thick, but

after boiling again it becomes thin. The above is ready for immediate use and should be used lukewarm.

NOTE.—Resin Soap already prepared for use is made by Pendray & Co., Victoria, B.C.

IVORY SOAP WASH

For Plant Lice and Soft Scale Insects on House Plants.

Directions.

Dissolve one cake soap, weighing some ten ounces, in seven gallons water, and apply with a syringe or spray pump at a temperature of 130 degrees.

NOTE.—This is a very cheap and simple remedy, easily applied without danger to the most delicate plants.



ARSENICAL SPRAYS.—SUMMER.

*For Codling Moth, all Apple Worms, Bud Moth Larvae, Caterpillars,
and all Insects that Eat either Fruit or Foliage.*

ARSENATE OF LEAD.

This invaluable remedy is of recent discovery, and is superior to all other Arsenical Mixtures for spraying against Codling Moth, all Apple Worms, Larvae of Bud Moth, Caterpillars, and insects that eat either fruit or foliage.

For Codling Moth or other Apple Worms, spray the trees thoroughly immediately after the blossoms fall. See that the calyx cup is full, and all the young fruit and foliage completely covered with the spray. The second spraying should be done ten days later, and the third spraying should be done when the fruit has attained its full size, No injury is done to the fruit by covering it with this mixture.

Directions.

Mix three pounds of Arsenate of Lead, which comes in the form of a paste, in one gallon of water, rain water preferred. Mix thoroughly till it is all dissolved and incorporated with the water, which, if properly done, will resemble ordinary cows' milk. Then add sufficient water to fill a forty-five gallon barrel.

This mixture is easily sprayed on and is delightfully adhesive; rain will not wash it off. The Arsenate of Lead is put up in five, ten, twenty-five, fifty and one hundred pound packages. Messrs. Brackman & Ker Milling Co.,

carry it in stock for the manufacturers at Vancouver, Victoria, Nelson and other points, and other merchants throughout the Province also carry it in stock.

If parties desire to make their own Arsenate of Lead, the following is the formula:—

Dissolve eleven ounces of Acetate of Lead (Sugar of Lead) in four quarts of hot water, using a wooden pail. In another wooden pail dissolve four ounces of Arsenate of Soda, 50 per cent. pure, in two quarts of water. Pour the solution into from twenty-five to thirty-five gallons of water and the mixture is ready for use.

SPRAY No. 9.—PARIS GREEN.

For Codling Moth, Apple Worms, Caterpillars and Other Leaf-eating Insects.

Ingredients.

Paris Green.....	5 ozs.
Fresh Slacked Lime	2 lbs.
Water	50 gals.

Make a paste of the Paris Green with a little water. Make the lime into milk of lime with water. Mix all together and add water to make the required quantity, viz., forty-five to fifty gallons.

Paris Green is a heavy powder and does not remain long in suspension hence it MUST BE KEPT CONSTANTLY STIRRED

WHEN USING. Be sure that good fresh lime is used to prevent burning of foliage. Apply with spray pump and "VERMORAL" nozzle.

Paris Green and Bordeaux Mixture can be applied together with perfect safety. Use at the rate of five ounces of Paris Green to one barrel of the Bordeaux. This is a combined insecticide and fungicide, exceedingly valuable.

NOTE.—Paris Green does not dissolve; it is apt to sink to the bottom of the barrel unless constant agitation is kept up. This is very important and must be carefully attended to, else there is unequal distribution of poison and consequent failure.

BLACK LEAF.

(Extract of Tobacco or Nicotine.)

This is a very effective remedy against all forms of aphides and plant lice. The Extract is manufactured in Kentucky, United States, and is now extensively used by American fruit-growers.

One gallon of the Black Leaf will make from fifty to sixty gallons of spray, which can be applied with spray pump with perfect safety all through the Summer months. It is especially valuable against Oyster Shell Scale when the young are hatching out, in May and June.

Directions.

Take one gallon of the Black Leaf and mix it in fifty to sixty gallons of soft water. Apply it with a spray pump having sufficient power to force the spray into the crevices

where colonies of Woolly Aphis are usually found. For the destruction of Woolly Aphis on roots, uncover the roots by removing the top soil, and saturate the ground with the solution.

Watch carefully the breeding season of the Oyster Shell Scale, which varies according to climatic conditions, but usually it occurs in the latter part of May and the first week of June. When the young are detected crawling over the tree or plant, spray immediately with the Black Leaf mixture.

WASH FOR BORERS.

Ingredients.

Crude Carbolic Acid.....	1 pint
or	
Refined Carbolic Acid.....	$\frac{1}{2}$ pint
Soft Soap.....	1 gal.
Paris Green	$\frac{1}{2}$ lb.

Directions.

Thin the soft soap with one gallon boiling water, stir in the acid, let it stand over night. Then make a paste of the Paris Green and stir into soap and acid. Add seven gallons soft water, and apply with white-wash brush or a coarse nozzle.

NOTE.—This is a good protection against apple tree borers, as it prevents the parent insect from depositing her eggs on the bark. It should be applied continuously from middle of May to end of July.

POISONED BAIT.

For Cutworms, Grasshoppers and Army Worms.

Ingredients

Paris Green.....	1 lb.
Bran	40 lbs.
Cheap Brown Sugar.....	5 lbs.

Directions.

Mix the bran and Paris Green thoroughly, then dissolve the sugar in sufficient water to moisten the mass to the consistency of mush. A tablespoonful placed on the ground at the base of the plant will be eaten greedily, and will destroy cutworms, grasshoppers and army worms. Cheap molasses will do well as a substitute for the sugar.

POISONED BAIT FOR GRASSHOPPERS.

Ingredients.

Paris Green.....	1 lb.
Salt.....	2 lbs.
Fresh Horse Droppings.....	40 lbs.

Directions.

Mix to the consistency of mush (not sloppy) and place on the ground where hoppers can readily obtain it; they will eat greedily and perish. Keep poultry and dogs away from poisoned baits.

BORDEAUX MIXTURE—SUMMER.

Summer Spray for all Fungus Diseases, such as Apple Scab, Plum Rot, Curl-Leaf, and Shot-Hole Fungus.

Ingredients.

Sulphate of Copper (Bluestone)	4 lbs.
Fresh Unslacked Lime	4 lbs.
Water (soft).....	45 gals.

Directions.

(Which must be followed to the letter to secure the best results.)

Dissolve the four pounds of copper with boiling water in a wooden vessel, and when thoroughly dissolved add sufficient water to make twenty-five gallons.

In another vessel dissolve four pounds FRESH unslacked lime (Marble Bay Brand is very superior). Use boiling water in slacking the lime, and when thoroughly dissolved—it should be as fine as flour—add sufficient water to make twenty-five gallons.

Into a third barrel or tank let the two solutions be poured simultaneously so as to mix as they are poured. This will give you fifty gallons of first-class Bordeaux which should be used IMMEDIATELY, for it is a well-known fact that Bordeaux Mixture begins to decompose within twenty-four hours after it has been made, and gradually becomes worthless. Much disappointment has been caused by inattention to this fact.

The solution should be strained into the spraying tank through a fine wire strainer. Burlap should not be used in straining, for the lint is liable to be carried into the nozzle and cause much trouble.

The "Spramoter Self-Cleaning Vermoral Nozzle" (two-cluster) is by far the best for spraying Bordeaux, as it distributes the spray in a fine mist. THIS IS THE SECRET OF GOOD SPRAYING.

SPRAY No. 16.

For Spraying against Mildew on Gooseberry, Rose Bushes and Other Plants Affected.

Potassium sulphide (liver of sulphur), $\frac{1}{2}$ to 1 oz. to 1 gallon of water; on tender plants the $\frac{1}{2}$ oz. will be sufficient,

This preparation loses its strength on standing, so should be made immediately before using. It is particularly valuable for surface mildews.

FUMIGATION

The system and methods of fumigation will be full dealt with in the revised illustrated edition of the report of the Inspector of Fruit Pests to be issued during the present year.

THOMAS CUNNINGHAM,

Inspector of Fruit Pests.

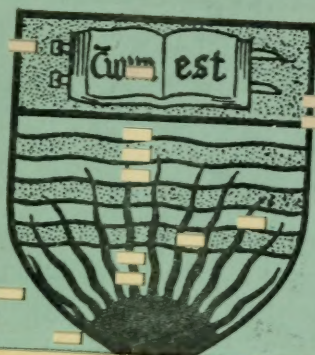
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